REMARKS

The Office Action mailed September 12, 2007 has been carefully reviewed and considered. Claims 1-60 are pending in the application. Claims 5 – 28 and 33 – 60 have been canceled.

The 35 U.S.C. § 102 Rejection

Claims 1 - 4 and 29 - 32 were rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Patent No. 5,450,504 to Calia (Calia).

Applicants respectfully maintain that Calia does not anticipate the claimed invention. Claim 1, for example, includes the following limitations.

A method of digital image processing using face detection for achieving a desired spatial parameter, comprising:
a) identifying a group of pixels that correspond to a face within a digital image;
b) identifying one or more sub-groups of pixels that correspond to one or more facial features of the face;
c) determining initial values of one or more parameters of pixels of the one or more sub-group of pixels;
d) determining an initial spatial parameter of the face within the digital image based on the initial values; and
e) determining adjusted values of pixels within the digital image for adjusting the image based on a comparison of the initial and desired spatial parameters.

(Claim 1) (Emphasis added)

Applicants respectfully submit that Calia does not disclose the limitation of determining initial values of one or more parameters of pixels of the one or more subgroups of pixels. Rather, what Calia is describing is determining the initial value of "facial key points" and "numerical indicators". A thorough reading of Calia clarifies that the facial key points and numerical indicators are not equivalent to the pixel parameters as claimed. Calia discloses the following:

"The first step for processing an image for use in the method is the feature extracting process or FEP. The FEP identifies, measures and quantifies facial features. Preferably 6 features are used. More or less may be used but it has been found that 6 is an optimal number. The preferred facial features or measurements are derived from facial key points. With reference to the numerals in FIG. 1 (in this text the key points are designated with a "P", but in FIG. 1 the "P" is omitted), the 11 facial key points are:

P1. Center of the right eye

P2. Center of the left eye

P3. Outer edge of the right eye

P4. Outer edge of the left eye

P5. Inner edge of the right eye

P6. Inner edge of the left eye

P7. Point located centrally between the eyes

P8. Point located centrally at the tip of the nose

P9. Point located centrally at the mouth

P10. Point located half way between 7 and 8

P11. Point located half way between 8 and 9

From these 11 facial key points, 6 lengths or measurements are taken, as shown in FIGS. 2 and 3, these are:

L1. Horizontal distance between the two eye outer edges: nomenclature--"eyeline"

L2. Horizontal distance between the two eye inner edges: nomenclature--"eyebetween"

L3. Average horizontal length of the eyes: nomenclature--"eyelength"

L4. Horizontal distance between the two eye centers: nomenclature--"eyeball"

L5. Vertical distance from the eyeline to the nose tip: nomenclature--"noseline"

L6. Vertical distance from the eyeline to the mouth center: nomenclature--"mouthline"

In order to compensate for different distances away from the camera, these six lengths are converted into ratios to form 5 numerical indicators. The eyeline distance is used as the common

denominator to compute the ratios because it is usually the longest dimension which therefore limits the range of the numerical indications.

The 6 preferred numerical indicators are:

F1. eyebetween/eyeline

F2. eyelength/eyeline

F3. eyeball/eyeline

F4. noseline/eyeline

F5. mouthline/eyeline

A sixth numerical indicator is computed by measuring the intensity of point P11 relative to point P10. This indicator will be used to indicate the presence or absence of a mustache; therefore:

F6. intensity of P11/intensity of P10

This last point is designated as the intensity ratio. An intensity ratio of other areas may be taken: for example the intensity of a point on the chin divided by a reference point intensity would indicate the presence or absence of a beard. For example; intensity of chin/intensity of P10.

The 11 facial key points could be retained to be available for use for computing geometrical transform matrices when the later Intensity Comparison Process is employed for comparing the target images with a particular data base image. However, as will be seen, some new points will be added, and some points will be dropped in the Intensity Comparison Process.

While the preferred points, measurements and distance compensation ratio is set out above; others may also be used. However, these preferred points, measurements and ratios have been found to give a high degree of success.

The most important feature on the face, in the present method, is the eyes. This is believed to be the case in terms of identifying discriminating features and measurements; but it is also the case in the following steps to establish the locations in the digital image of the points due to high contrast between the eye whites and eye pupils and eye inner and outer edges. It is necessary to be able to locate the facial key points in a manner which is consistent from face to face and which is readily extractable from a digitized image.

Therefore, a critical step is to locate the points in the face by a method which can be consistently applied to all faces. Following is a description of those steps for data base images stored in TIFF, which begins with the critical step of locating the eyes."

(Calia, col. 4, lines 42 – col. 5, line 59) (Emphasis added)

As shown in this portion, as well as the remainder, of Calia, facial features and their relation to one another are being determined. Calia does not disclose determining initial values of pixel parameters of pixels corresponding to the facial features as claimed.

Specifically, at col 5, line 49 – 51, Calia discloses only that the eye is an important facial feature for the inventive process because the location of the eye is more readily discernable due to the degree of contrast between portions of the eye. Calia does not disclose determining initial pixel parameters for those pixels or for any other pixels corresponding to facial features.

Additionally, Calia does not use the initial values of pixel parameters, or any values of pixel parameters to determine spatial parameters as claimed. Calia uses the locations of the facial features together with the numerical indicators to determine spatial parameters of the face.

Moreover, Calia does not disclose adjusting the "target" image, but rather a comparison of the target image to a reference image. The Examiner has cited Calia at col. 8, lines 44 – col. 9, line 35 as disclosing the claimed limitation of "determining adjusted values of pixels within the digital image for adjusting the image based on a comparison of the initial and desired spatial parameters"

However a closer reading of this portion of Calia discloses that the PVS database image is "transformed" into the target image's spatial coordinates (i.e., the database image is not transformed into the target image or vice versa). The database image parameters are not disclosed as being "desired" and no adjusted values of pixels are determined. Moreover, "adjusting the image" is not disclosed, but rather the transformation is of the reference image into the spatial coordinates of the target image in order to effect a comparison.

For these reasons, applicants respectfully submit that claim 1 is not anticipated by Calia. Given that claims 2 – 4 and 29 – 32 also include the limitations discussed, applicants respectfully submit that claims 2 – 4 and 29 - 32 are, likewise, not anticipated by Calia.

With this amendment it is respectfully submitted the claims satisfy the statutory requirements. In view of the foregoing, it is respectfully asserted that the claims are now in condition for allowance.

Conclusion

It is believed that this Amendment places the above-identified patent application into condition for allowance. Early favorable consideration of this Amendment is earnestly solicited.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case. Please charge any additional required fee or credit any overpayment not otherwise paid or credited to our deposit account No. 50-4399.

Respectfully submitted,

Dated: December 11, 2007

/Thomas Van Zandt/
Thomas Van Zandt
Reg. No. 43,219

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